

The Institution of Engineers, Australia

Sydney Engineering Heritage Committee**Oral History Program****INTERVIEW TAPE LOG**

Interviewee: JAMES HASSELL LIDDLE **Tape Numbers:** IEA SYD RB1
 IEA SYD RB2
 IEA SYD RB3
 IEA SYD RB4

Interviewer: ROSLYN BURGE **Number of Tapes:** 4

Place of Interview: Mr Liddle's home at 'The Grange', WAITARA

Date of Interview: 8 and 15 October 2003

Restrictions on Use: NIL

Log prepared using (make and model of machine):
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Tape IEA SYD RB1, Side A		Date: 8 October 2003
Counter	Subject	Proper Names Keywords
000	James Hassall Liddle	James Hassall Liddle
010	Hassall – distant relative in Sydney, nephew of Samuel Marsden	Hassall
016	Born in Wellington, New Zealand 19 April 1908 – 95 years of age	Wellington
018	Mother - Maude Florence Martelli Father – Ernest Alfred Liddle (investment adviser, Wellington)	Maude Florence Martelli
023	Travel to New Zealand – Ernest Liddle went from Albury to New Zealand as a young man	
027	Primary schooling at Terrace School, Napier, New Zealand, public government school	Terrace School, Napier
031	Secondary schooling – Napier Boys High School	Napier Boys High School
032	Siblings – James Liddle was oldest. Then John, Margaret, Peter, Douglas. Still in New Zealand. No mostly here. John died about 20 years ago.	
038	Discussion of career – wanted to be an engineer. Whole schooling arranged for that.	
041	Discussion of family background, school subjects.	
055	Parents were separated and later divorced. One of first divorces in the country – c.1919	

	Discussion of living with single mother – father provided financial support.	
068	Discussion of further engineering – mother's sister was supportive – James went to Wellington, siblings followed. Discussion of family living arrangements.	
088	Education - University of New Zealand – went to Wellington campus, Victoria College, then Christchurch. First year engineering was first year science. Discussion of subjects	University of New Zealand, Victoria College in Wellington
101	Discussion of engineering course – popular – university student population – no women students in engineering – 4 year degree.	
112	As a civil engineer student – 9 months in workshops and 9 months under civil engineer. Workshop training done during university summer holiday – in the Wellington Tramway Workshops. 18 months practical work component as part of the degree	Wellington Tramway Workshops
124	Discussion of New Zealand settlement and population – English	
127	Passed final exam in 1929 – unable to graduate until he could pay the 10 guineas to graduate. Finally received testamur 4 years later in 1933.	
131	Discussion of financial support during university – mostly scholarships. University scholarship paid all fees and £25 per year. Thirty such scholarships nationally. Great credit to win scholarship.	
148	Napier College – no student ever won scholarship at Napier and advised to change schools to Wellington. Important to win scholarship.	
159	First job after graduation in Christchurch – New Zealand Public Works. Discussion of work – similar to county engineer. Recollections of kind of work undertaken. 1929	New Zealand Public Works
170	New Zealand government schemes for unemployed in 1929 – numerous road building efforts across country. Camps established – employed men at 15 shillings a day. Mr Liddle would drive out for the day.	
187	Discussion of government employment – lifetime job.	
200	Mr Liddle did not see public service as a lifetime job – intended to go overseas – South America, South Africa – experience and romantic reasons.	South Africa, South America
212	Lake Ellesmere – 1930/31. Public Works project - depression project. Discussion of Lake Ellesmere project – triangular lake. Walked round it three times during course of the work. Surveyed Lake – flooding – sour land – stabilisation of outlet and land reuse. Review outlet potential. Tide records. Description of physical aspects of the site.	Lake Ellesmere
311	Discussion of techniques now to measure tides – need then to be innovative and description of technique used to measure tides.	

327	Leaving Public Works – gave Mr Liddle 3 months notice. Explored options to travel overseas. Mother living in Sydney since 1925 – living in Manly, later moved. Step-father's name was Lyell Tatten. Never bought property.	Lyell Tatten
356	Lyell Tatten in petroleum business. Discussion of coming to Sydney in 1931. Landed in Sydney Anniversary 1932. Remembers arrival – coming to live with mother in Manly.	
377	Discussion of arrival into Sydney wharves – ship berthed at Pyrmont.	
	End, Tape IEA SYD RB1, Side A	

Tape IEA SYD: RB1, Side B		
Counter	Subject	Proper Names & Keywords
001	Discussion of arrival at Pyrmont and travel to Balmoral	Balmoral
009	Employment – efforts to gain employment in Sydney were difficult. One position - Junior Engineer in Willoughby Council - discussion of interview process at Chatswood. Needed to be a returned soldier to get employment – over 400 applications to the job. Tried a company in Queensland – steel company in Wollongong. Consider work in other areas? No only engineering.	Willoughby Council Wollongong
043	March 1932 – after Bridge opened , moved from Balmoral to Killara. Mother lived in Almora Street, Balmoral. Move to Killara gave him something to do. House on 1 acre – Watt Street. Discussion of land clearing, enjoys hard work. Few machine tools – no bulldozers, few small diesel engines.	Killara Almora Street, Balmoral Watt Street, Killara
068	Discussion of pick and shovel machinery – clearing garden. Engaged to be married as he left New Zealand. Betty Hobbs – died ten years ago. Got engaged in 1931 – she came to Sydney in 1934. Married and lived in Roseville.	Betty Hobbs Roseville
092	During period of unemployment cleared parents' garden at Killara. Neighbour, Mr Maxwell, impressed by effort and suggested job at Noyes Brothers, where they needed an engineer in refrigeration.	Mr Maxwell Noyes Brothers
116	Noyes Brothers – visit. Discussion of visit, Mr Moates in charge. Noyes located in Clarence Street, Sydney, near to Erskine Street. Discussion about starting job.	Mr Moates Erskine Street, Clarence Street, Sydney
130	Employment – undecided about working in refrigeration – aware of lack of knowledge in the field. Mr Liddle thought he would be a structural engineer, skills in designing structures. House in Killara belonged to someone (unable to recall name) who had been with the firm of structural engineers in Sydney. Went to his firm for a job – unable to offer any openings because the depression.	

146	Consider returning to New Zealand – no. Or moving interstate for work? No, no money.	
152	<p>Started work at Noyes Brothers in November 1932 as Technical Head of the Refrigeration Sales Department. Manager was 30 years older. Was that difficult being so young – no, had a great flair for writing letters – “this has been one of my most favoured talents”!</p> <p>As you get on in engineering you realise it’s a beginning.- in the craft.</p> <p>Mid 1933 Noyes Brothers realised the refrigeration was a big loss. There was lot of people in business – only sell to butchers and icecream places.</p> <p>Wanted to see jobs in situ - went to Balmain to see conversion of a butchers shop cold room from ice refrigeration to mechanical. Discussion of process of installation.</p>	Balmain
202	<p>Visit to Balmain butchers shop – learnt a great deal. Discussion of Lovelock (refrigeration/engineering accessories) Discussion of evaporator (made by Emmco, Electricity Meter Co, now Email).</p> <p>Lovelock enquired about product – Mr Liddle wrote a paper discussing potential modification to product – more fins to evaporator.</p> <p>Discussions with Mr Lovelock and possibility of working there. (Lovelocks staff were Mr Lovelock and a secretary compared to 120 people at Noyes.) Mr Lovelock backed by J. I. Carroll, head of Email, and offered increase in wages - £5.5.0 – worked there 3 years.</p>	<p>Balmain Lovelock Emmco</p> <p>J. I. Carroll</p>
256	<p>Lovelocks in Clarence Street – not worried about leaving Noyes Brothers. Working with Lovelocks was a great success – new industry – new people in the industry, mostly motor mechanics.</p> <p>Lovelock sold refrigeration accessories: evaporators; copper tubes; brass fittings; automatic controls. All imported.</p> <p>Scullin tariff- 75% duty.</p>	Lovelocks Clarence Street
280	Discussion of work responsibilities – most of his work involved writing letters – enquiries from all over the country. Lovelock had only been established a year. Discussion of Mr Lovelock’s health – emphysema – died under anaesthetic. Discussion of Mr Liddle and another colleague continuing to run the business.	
315	Discussion of development of Lovelocks and refrigeration business.	
321	End Side B, Tape IEA SYD RB1	

Tape IEA SYD RB2, Side A		Date: 8 October 2003
Counter	Subject	Proper Names & Keywords
005	Discussion of Noyes Brothers business – engineering accessories – importation business – technical sales.	Noyes Bros
025	Refrigeration manufacturers in Sydney in 1930s Waugh & Josephson, Budge, Wildridge and Sinclair, J. Villiers and Company. Located in Rosebery.	Waugh & Josephson Wildridge & Sinclair
032	Discussion of technique of refrigeration process	
051	Noyes Brothers employed considerable number of engineers – including people from Singapore Docks which had been finished – in the office as sales engineers.	
060	Discussion of refrigerants at the time – ammonia, carbon dioxide.	
075	Discussion of range of customer enquiries at Noyes and Lovelock – design of a particular refrigeration unit.	
098	Discussion of the use of methyl chloride as a refrigerant – and sulphur dioxide	methyl chloride sulphur dioxide
112	Discussion of seal problem with such refrigerants – Mr Liddle did not work on this aspect	
117	Discussion of Lovelock's agencies with firms in the United States ~ from Detroit Thermostatic Valves, Wagner Motors. Mr Liddle sent for the printed material associated with these companies and became an "avid gatherer of knowledge"	
133	Couldn't have learnt more than I did at Lovelocks. He hadn't had anybody as curious as Mr Liddle!	
141	Discussion of ASRE Data Book (American Society of Refrigeration Engineers) – read nothing else for 3 months – "it was beautiful" – gave all his literature to University of NSW.	American Society of Refrigeration Engineers
167	American Society well established by 1930s – only 2 or 3 members outside America, including Mr Liddle	
178	Institute of Refrigeration – formed in NSW – a club whose members were working/operating engineers who kept the plant going in iceworks. Discussion of monthly meetings, usually held at History House in Young Street.	Institute of Refrigeration - NSW
194	Discussion of Mrs Liddle.	
203	Discussion of methyl chloride - what made it suitable? Had to be a liquid with reasonably high temperature	
245	Contact with universities at the time? No	
248	Work associated mostly with commercial refrigeration companies. Discussion of use of air curtain in supermarket refrigeration units. Discussion of contemporary supermarket open refrigeration units.	
279	Drawback of methyl chloride – it attacked aluminium parts – that's why it rapidly went out of favour.	
295	Discussion of flooded refrigeration process. Discussion of the TX Valve These were manufactured in Australia.	TX Valve

328	Refrigerant expansion valves were imported. Discussion of pressure – introduction of thermostatic expansion valve.	Thermostatic valve
379	Discussion of United States pre-eminence in engineering. Import most product from US.	
397	End Tape IEA SYD RB2, Side A	

Tape: IEA SYD RB2, Side B		
Counter	Subject	Proper Names & Keywords
002	Import product from UK, not Europe	
018	Journal of the American Society	
020	Contribution of articles to local journals after the war – Iced Refrigeration Journal - or Refrigeration Journal.	
024	Discussion of leaving Lovelocks – early 1930s. Colleague for some years was Dick Fennell.	
033	Discussion of construction of David Jones new store – food hall was “revolutionary”, also installation of airconditioning. J & E. Hall, UK manufacturers of refrigeration contract Mr Liddle went to see him about getting a job	J & E Hall
050	Difference between airconditioning and refrigeration	
055	Unable to get a job with J & E Hall but became more determined than ever to get a job in refrigeration – but more determined than ever to learn more about airconditioning.	
057	Discussion of airconditioning, a branch of science. Only book he could find on subject was written as a science text book from 1858 – discussion of antiquated content of book.	
072	Main forms of airconditioning used at cinemas – discussion of cinema airconditioning.	
093	Unit Air Conditioners – set up by Doyles. Mr Doyle – big in picture business, United Artists. Got into airconditioning business by way of offering finance to import airconditioners.	Unit Air Conditioners Mr Doyle United Artists
105	Discussion of Unit Air Conditioners. Mr Picot, Manager of Unit Air Conditioners, offered him a job. Salary rise from £6.10.0 to £8 per week. Discussion of particular airconditioning unit – absorption of water. Machine used to dehydrate air – problem was that it was uncontrollable. Unit sold in America for extensive uses – got moisture out by absorption. Discussion of latent heat.	Mr Picot
160	Unit Air Conditioners imported one of these machines and astonished at how cheap it was – roughly a quarter of the price. Because of technical difficulties above – problem applying it to airconditioners.	
174	Travelled to the States to make further enquiries about machinery for silica gel dehydration. (His wife and child travelled with him.)	

178	Travel to the States – Matson Line “Mariposa” – travelled across States by train. Lived in Cleveland for several weeks.	
188	Units easily reproduced in Australia but latent heat remained a problem. Needed to have a refrigeration unit.	
196	Discussion of ready availability of groundwater (at constant 70 degrees) at Cleveland as a coolant. Difficulty in Sydney of drawing water from Water Board system and unable to use it again.	
226	At end of time in Cleveland the system found to be unusable in Sydney.	
230	Left Cleveland to investigate other potential agencies for Sydney. Every application he saw had a Honeywell thermostat or controls. He went to Export Department of Honeywell in Boston with an accountant, Crandall Sharp.	Honeywell Crandall Sharp
244	Minneapolis Honeywell creating industrial division in Boston. Coy about setting up agency in Sydney – agency already held by Blackmore in Castlereagh Street, Sydney. Discussion about possibility of taking over agency in Sydney.	
276	Back in Sydney – worked from an accountant’s office in Martin Place – part of the syndicate which funded the project.	
286	Unit Air Conditioners were financed up to £10,000 by Mr Doyle and up to their limit. Sold unit to Martin Hall in Margaret Street, a 10-storey building built as leased apartments – heated and cooled. Novel for 1937 – old Vacuum Oil Building. Discussion of apartment project.	Martin Hall, Margaret Street
314	Mr Doyle pulled out on financing Unit Air Conditioners – company sought to transfer agency, one possibility was Noyes Brothers.	Noyes Brothers
343	Discussion of final period with Unit Air Conditions – transfer of Honeywell agency to Mr Liddle and partner Epstein from H. P. Gregory	H. P. Gregory Fred Epstein
392	End, Tape IEA SYD RB2, Side B	

Tape: IEA SYD RB3, Side A		Date: 15 October, 2003
	Note – some background conversation – tradesman working elsewhere in Mr Liddle's apartment	
Counter	Subject	Proper Names & Keywords
005	Discussion of the types of controls Honeywell manufactured	Honeywell
024	Looking particularly at electric controls	
033	1938 – MLC Centre – discussion of involvement with this project. Discussion of requirements of Gutteridge Haskins & Davey for airconditioning building. Some interest by Carrier in the project.	MLC Centre Gutteridge Haskins and Davey Carrier
055	Mr Liddle not really involved in MLC project until almost over. Partnership in A. E. Epstein	
060	Introduction to Fred Epstein – left Austria to live in Australia. Mr Epstein sold Honeywell equipment in Italy and had Honeywell keep commissions in US dollars in the US. Description of Mr Epstein – had to leave Vienna – handled Honeywell for some years in Central Europe. Irony of coming to Mr Liddle when he was struggling to establish a business.	Fred Epstein
088	Mr Epstein had installation expertise (electrical engineering diploma from University of Vienna) – discussion of project with MLC.	
1.05	1938 until wartime – commercial systems continued to be installed. United Air Conditioners	
120	Issue of Honeywell agency more concerning by 1938 – various parties had an interest (Gregory's, Unit Air Conditioners represented by James Liddle, and couple of executives who were also in the background). Discussion about agency.	
137	Agency valuable – everyone trying to retain it. Epstein proposed taking on agency – Epstein had £400 used to establish partnership.	
157	Dec 1938/Jan 1939 – discussions with Honeywell director who visited Australia. Company called Liddle & Epstein, tiny office in accountant's office in Martin Place. Moved offices to cnr Bridge and Phillip Street, Sydney. Later another office in Macquarie Place – room 10 feet by 10 feet. Discussion of office features and proximity to importing/customs agent.	Liddle & Epstein Bridge Street Sydney
209	Business growing – increased imports. Staff: Reg Kelly, qualified electrician, stayed with the firm for the duration; secretary. Soon had three staff.	Reg Kelly
225	Wartime - discussion of munitions complex at St Mary's – ADI site – airconditioning the site lasted for some years. Mr Liddle never went there – Epstein was the service manager. Discussion of the delineation of jobs.	ADI site at St Mary's
243	Discussion about work with client companies	

253	Discussion of development of the firm into industrial work – about 1940.	
258	1942 – discussion emanated from Egypt about potential for Australia to manufacture tanks. Discussion of production of cast iron cabin at the top of the tank – Sydney firm engaged to do casting – heat treated – steel 2 inches thick. Mr Peterson from Gas Company designed the furnace.	Mr Peterson
321	Discussion of wartime control. Two separate associations – NSW Institute of Refrigeration. AIRAH – Australian Institute of Refrigeration, Airconditioning and Heating.	NSW Institute of Refrigeration and AIRAH
334	Discussion of involvement with AIRAH – first joined in 1933. Frequent travel to Melbourne, contact with Melbourne Institute and became the liaison. 25-30 people in Sydney and same in Melbourne.	
358	Discussion of way in which the Institutes amalgamated – Mr Liddle's frequent trips to Melbourne assisted the amalgamation. Discussion of difference between Sydney group – more professional emphasis / Melbourne Institute more commercial. Statewide membership.	
382	End, Tape IEA SYD RB3, Side A	

Tape: IEA SYD RB3, Side B		
Counter	Subject	Proper Names & Keywords
008	Reg Quigley, Chief Engineer, Tooths Brewery	Reg Quigley Tooths Brewery
014	Fred Goodman, Works Engineer in Victoria, came to NSW	Fred Goodman
	Ted Crouch, Dairy Farmers in NSW, used to committee work	Ted Crouch Dairy Farmers
017	Percy Carpenter, no technical knowledge. Involved in import/export business and freezing works. Head of Carlton Group.	Percy Carpenter Carlton
023	Venues for meeting – History House in Phillip Street	History House
025	General discussion about Institute. Few details. Recording faint.	
042	Charlie Seaby, Warburton Franki, agency for Frigidaire Retired by wartime Eric Ebeling, Seaby's assistant. Danger Gedy and Malloch – important in country refrigeration. Office close to Circular Quay. Like Dalgety today.	Charles Seaby Warbuton Franki Frigidaire
058	Discussion of work of Warburton Franki – like Noyes Bros – large wholesale firm handling electrical machinery	Warburton Franki
061	Ginger McCullagh, Waugh & Josephson, made refrigerators, compressors.	Ginger McCullagh
067	Harry Goldstein, emigrated to Australia in 1939. – NOW Email	Harry Goldstein

078	Discussion of Institute – people involved were professional and commercial . Victorian Institute catered to both – not in NSW. NSW always keen to keep Institute technical, professional.	
087	Low Pressure Technical body formed.	
091	Discussion of high pressure and low pressure. (ammonia and sulphur dioxide, respectively) Ammonia was all industrial, sulphur dioxide was commercial. Discussion of refrigerants.	
103	Discussion of Liddle & Epstein – office technology – none! Eppie had a machine he wound to make financial calculations – 8” cylinder. Slide rule – description of slide rule. Purchased in 1929.	Kerfle and Esson
133	Miss Flood, engaged for years.	Miss Flood
145	Discussion of social interaction with Mr Epstein.	
151	Discussion of Melbourne Institute: Bill Dobney, Werners	Bill Dobney Werners
161	Discussion of George Brewer, cork merchant. 99% of insulation material was cork.	George Brewer
184	Discussion of Fibreglass	
188	George Coleman, Chief Engineer, Carlton Brewery	George Coleman Carlton Brewery
195	Professor W. J. Young	Professor W. J. Young
201	Discussion of Alistair Gibbs, Coldstream Gibbs in Adelaide.	Alistair Gibbs
224	Discussion of sealed unit – domestic refrigerators.	
241	Discussion of work with Alistair Gibbs in amalgamation work between Sydney and Melbourne institutes. Sept 1940 – Refrigeration Unit in NSW.	
266	Discussion of first federal meeting in Albury.	Albury
277	Discussion of first federal president, M. E. Gordon.	M. E. Gordon
298	Works Engineers were pushing development of Institute in NSW	
307	Discussion of George Bolton, first Federal Secretary.	George Bolton
317	Brief discussion of role as NSW President of the Institute – merge of two institutes.	Repins
352	Intellectual advancement of the Institute over the years is remarkable.	
370	End Tape IEA SYD RB3, Side B	

Tape: IEA SYD RRB4, Side A		Date: 15 October, 2003
Counter	Subject	Proper Names & Keywords
013	Discussion of use of psychometric chart. Mr Liddle introduced psychometric chart in Sydney.	Carrier
024	Discussion of visit to Trane Company and adoption of psychometric chart.	Trane Company
040	1947 became Federal President of Institute – discussion of importance of federation.	
046	Launch of official journal for Institute – Harry Goldstein worked to develop the journal. Discussion of his role in steering the journal.	Harry Goldstein
058	Discussion of courses in refrigeration engineering.	
064	Journal – <i>EcoLibrium</i> – cross-over between disciplines	
074	Late 1940s – Code of Safe Practice for the Industry Chair of the meeting - formed a subcommittee.	
090	Discussion of reasons for retirement from the committee in 1948	
105	Discussion of location of offices in Macquarie Place – until 1957 – then purchased land in Macquarie Street and built a building near the stone steps leading to Circular Quay. David Snelling was the architect. Discussion of airconditioning requirements for that building.	David Snelling
121	Sold out to Honeywell after 6 years – they leased the building for another 15 years.	Honeywell
123	Discussion of Liddle Epstein & Warnock – branch opening in Melbourne. Staff of approx 115 in Sydney, Melbourne Adelaide and Perth – own premises in all but Perth.	Liddle Epstein & Warnock
134	Manager in Adelaide was Doug Bell.	Doug Bell
145	Day-to-day running of the firm by Bell in Adelaide and Warnock in Melbourne.	
150	Discussion of work in Melbourne – more installation work.	
155	Discussion of work in Swan Brewery in Perth in 1950s. Description of rebuilding and refrigeration requirements – Chief Engineer approached Liddle & Epstein – use of circulating cold ammonia.	
220	A number of engineers in brewery industry – Mr Quigley..	Quigley
231	Mr Liddle's enjoyment in reading about new technical aspects and kept up with engineering literature.	
231	Discussion of Honeywell's equipment Radiation Pyrometer – inverted telescope to focus on inside surface of furnace – developed by Brown Instrument Company (a section of Honeywell). Read the article all the way to Melbourne in the train.	Radiation Pyrometer Brown Instrument Company
248	Discussion of different roles between partners - Liddle & Epstein.	
256	Discussion of the growth in the company.	

267	Discussion of Honeywell computers – involvement with the defence industries. Honeywell relatively unknown – IBM much bigger industry profile.	
307	Discussion of Honeywell relationship – established in 1939 and ran for 25 years – bought out Liddle & Epstein. Conclusion of partnership in 3 days.	
340	Left Liddle & Epstein – decided to go on the land. Living in a flat in Killara purchased in 1948 – vacated 1953 for a house in Killara. Roof area insulated – novel for the 1950s.	
368	Discussion of retirement – renovated house – bought a farm with the assistance of brother who was a sheep farmer near Armidale	
	End, Tape IEA SYD RB4, Side A	

Tape: IEA SYD RB4 Side B		
Counter	Subject	Proper Names & Keywords
006	Discussion of farm purchased outside Scone – in his mid 50s by then.	Scone
011	Farm in Hastings Valley with frontage to Ellenborough River Discussion of introduction of new fencing.	Hastings Valley Ellenborough River
055	Discussion of farming, particularly innovative calf-branding frame.	
078	1973 – Life member of AIRAH– brief discussion of annual dinner.	
092	1973 – exhibition at Sydney Royal Easter Show. Involvement with Harry Singleman. Honeywell had a booth.	Honeywell Harry Singleman
1.02	Discussion of selling out of cattle industry – Wauchope	Wauchope
111	Discussion of purchase of land at Windsor – established orange orchard and sale of alluvial soils on Nepean River.	Windsor Nepean River
147	Offer to Council to give land to Council as a public park. Discussion of Boral's rock extraction from surrounding landscape. Five years to get permission – park on the roadway to Springwood. Eventual sale of land.	Boral Springwood
2.06	Three different careers – discussion of harvesting 25 acres of oranges.	
224	Discussion of small acre properties and farming practices.	
271	Looking back on engineering industry? Enjoy reading journals.	
281	End of Tape: IEA SYD RB4, Side B End of Interview	